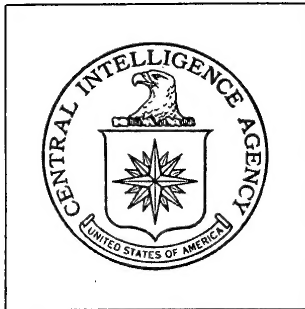


Top Secret



DIRECTORATE OF
INTELLIGENCE

**Industrial Facilities
(Non-Military)**

Basic Imagery Interpretation Report

Gorkiy Petroleum Refinery Novo Gorkiy

Gorkiy, USSR



25X1



25X1

Top Secret

RCS 13/0011/72
25X1

DATE NOVEMBER 1971
COPY 11
PAGES 16

Page Denied

TOP SECRET RUFFCENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

RCS - 13/0011/72

INSTALLATION OR ACTIVITY NAME		COUNTRY
Gorkiy Petroleum Refinery Novo Gorkiy		UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	25X1
38VMH470180	56-06-17N 044-08-33E	
MAP REFERENCE		
8th RTS. USATC, Series 200, Sheet M0155-21HL, 4th ed, May 70, Scale 1:200,000		
(SECRET)		25X1
LATEST IMAGERY USED	NEGATION DATE (If required)	
	NA	

ABSTRACT

Gorkiy Petroleum Refinery Novo Gorkiy is one of the 20 largest refineries in the USSR with respect to charge capacity. Major refining components include desalting units, crude oil distillation units, thermal cracking units, lubricating oil production units, blending and treating units, catalytic reforming and hydro-treating units, a gas purification and cracking unit, a sulfuric acid plant, probable synthetic fatty acid production units, a possible hydrotreating unit, and several unidentified secondary processing units. A petrochemical processing unit is also present.

The products of the refinery include straight-run, cracked, reformed, and blended gasolines in a wide range of octane ratings, kerosene, hydrotreated diesel and fuel oils, lubricating oils, asphalt, waxes, aromatics, and petrochemical feedstocks and products. Synthetic fatty acids are also probably produced at the refinery.

The refinery has been operating on all photographic coverage, from December 1961 through August 1971. Construction has continued throughout this period. In August 1971, three new processing units were under construction.

This report includes a photograph and a line drawing of the refinery, a detailed listing of equipment and facilities with measurements of storage tanks, a chart showing construction chronology, and a discussion of the status of facilities.

TOP SECRET RUFF

TOP SECRET RUFF

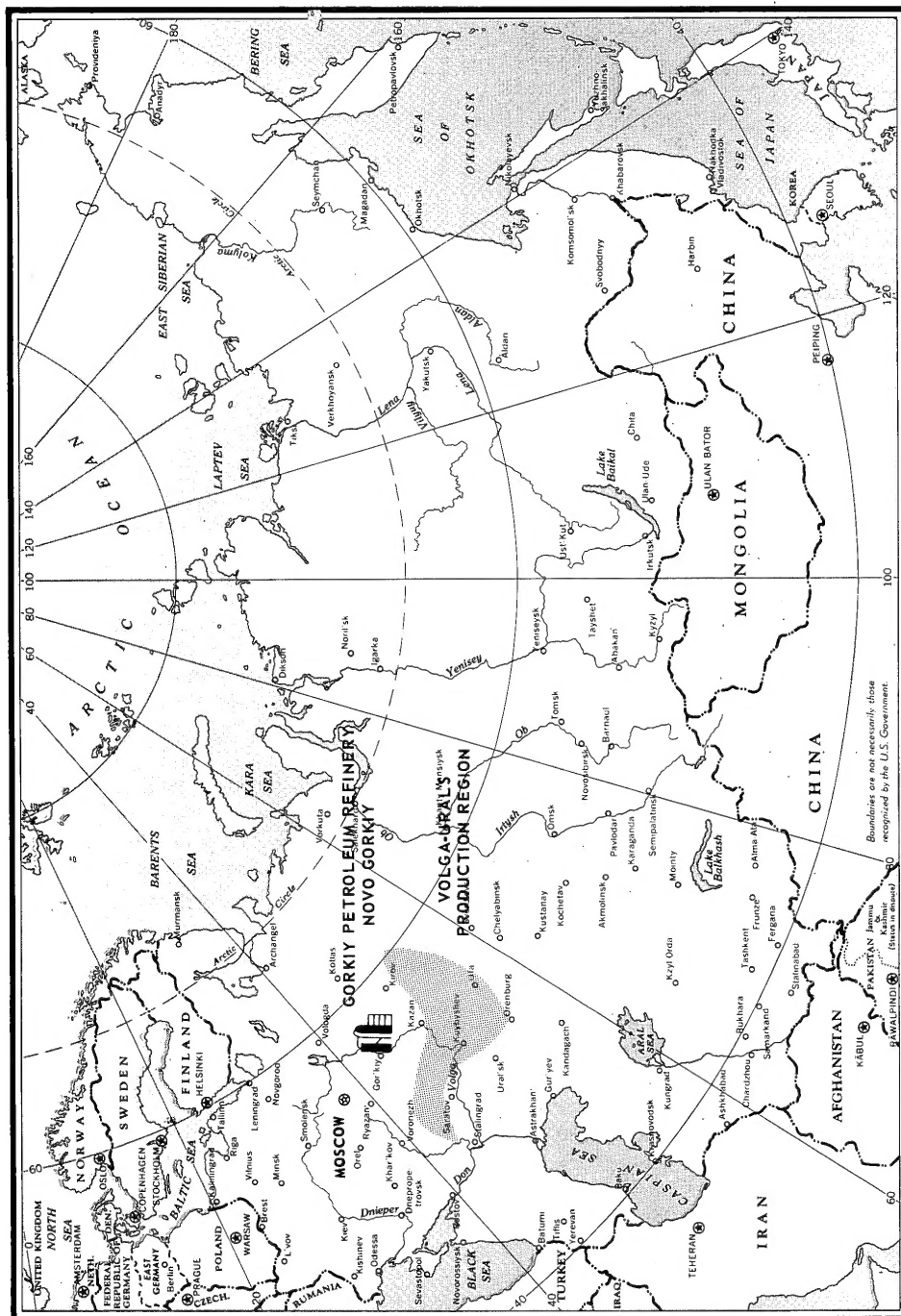


FIGURE 1. LOCATION MAP.

TOP SECRET RUFF

TOP SECRET RUFF

25X1

INTRODUCTION

Gorkiy Petroleum Refinery Novo Gorkiy is located 13.5 nautical miles (nm) south-southeast of Gorkiy and 3.5 nm south-southwest of the Volga River (see Figure 1). It began operating in mid-1958. 1/

The refinery is connected by pipeline to storage and transshipment facilities at Gorkiy Petroleum Storage Velikiy Urag located on the south bank of the Volga. Rail service is provided by a spur from the main line between Arzamas and Gorkiy. Crude oil to charge the refinery is brought by pipeline from Almet'yevsk in the Volga-Urals production region. 2/ Electric power and steam for the refinery are produced at the collocated Gorkiy Heat and Thermal Power Plant Novogorkovskaya TETS

25X1

25X1

BASIC DESCRIPTION

The refinery area measures approximately 7,700 by 6,700 feet and contains about 1,200 acres (see Figures 2 and 3). The entire complex, including the refining, storage, and support areas, occupies about 2,500 acres. The refining area is secured by a combination of walls and fences.

Operational Functions

This refinery is one of the 20 largest in the Soviet Union with respect to charge capacity. The major refining units presently in operation include desalting units, crude oil distillation units, thermal cracking units, lubricating oil production units, blending and treating units, catalytic reforming and hydro-treating units, a gas purification and cracking unit (for petrochemical feedstock), a sulfuric acid plant, probable synthetic fatty acid production units, a possible hydrotreating unit, and several unidentified secondary processing units. A petrochemical processing unit is also present.

Based on the identification of processing units, the products of the refinery include straight-run, cracked, reformed, and blended gasolines in a wide range of octane ratings, kerosene, hydrotreated diesel and fuel oils, lubricating oils, asphalt, waxes, aromatics, and petrochemical feedstocks and products. In addition, synthetic fatty acids, which are used in manufacturing soaps and detergents, are probably produced at this refinery.

Construction and Operational Status

The refinery was in operation when it was first observed on photography in December 1961, and on all subsequent coverage through August 1971. Construction has continued throughout this period. Figure 4 shows the chronology of construction since April 1963, the date of the first good-quality photography of the refinery. In August 1971, three processing units were under construction.

Facilities and Equipment

Table 1 lists the functional areas and the equipment and facilities in the refinery. All of the items listed are shown in Figure 3. Equipment in areas under construction is not listed in the table or shown in Figure 3. All measurements are rounded to the nearest half-meter.

TOP SECRET RUFF

25X1

Page Denied

Next 1 Page(s) In Document Denied

TOP SECRET RUFF

25X1

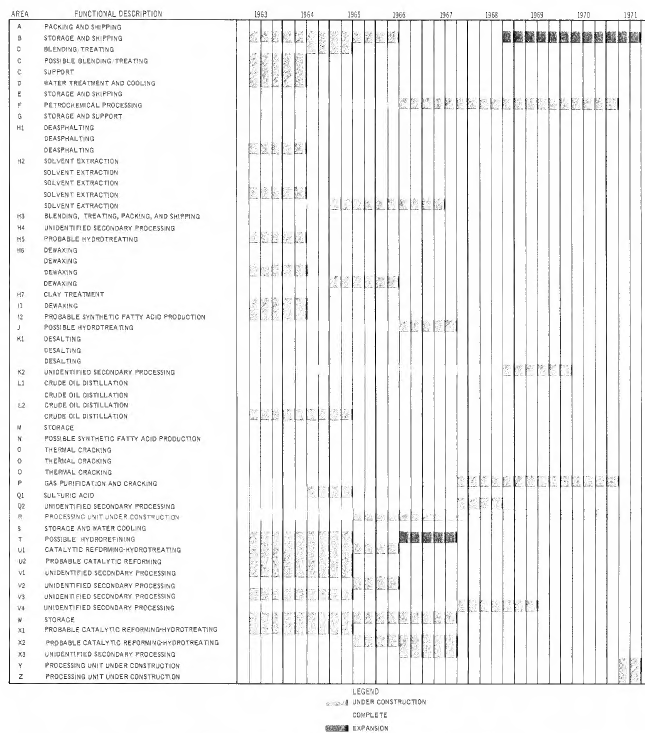


FIGURE 4. CONSTRUCTION CHRONOLOGY, GORKIY PETROLEUM REFINERY NOVO GORKIY, USSR.

TOP SECRET RUFF

25X1

TOP SECRET RUFF

Table 1. Equipment and Facilities at Gorkiy Petroleum Refinery Novo Gorkiy
(Keyed to Figure 3)

<u>Area</u>	<u>Functional Description</u>	<u>Equipment and Facilities</u>	
A	Packing and Shipping	35 Miscellaneous buildings 1 Cylindrical storage tank, [redacted] 3 Semiburied storage tanks (not measured)	25X1
B	Storage and Shipping	5 Loading racks 88 Miscellaneous buildings 51 Cylindrical storage tanks 10 33-meter-diameter 20 24-meter-diameter [redacted] 3 Tank bases 20 Horizontal storage tanks 6 24-meter-long 14 individually roof covered 6 Semiburied storage tanks (not measured) 51 Semiburied reservoirs 1 Water storage/treatment basin	25X1
C	Blending/Treating and Support	1 Unit with 1 pipe furnace 1 shipping building with 6 batch agitators/mixers 4 processing buildings 15 processing/storage tanks 1 support building 5 cylindrical storage tanks 4 [redacted] 1 [redacted] 1 Possible blending/treating unit with 8 processing buildings 2 shipping buildings 2 support buildings 8 cylindrical processing/storage tanks 3 horizontal processing/storage tanks 18 Support buildings (two with cranes) 4 Cylindrical storage tanks, 18 meters in diameter 9 Horizontal storage tanks, individually roof covered	25X1

TOP SECRET RUFF

9A000500010031-7

25X1

010031-7

TOP SECRET RUFF

Area	Functional Description	Equipment and Facilities
H	Lubricating Oil Production	
	(1) Deasphalting	3 Units, each with 6 columns 1 cluster of processing equipment 1 bank of heat exchangers/cooling coils/accumulators 1 pipe furnace 1 pump building 6 cylindrical storage tanks, 3 meters in diameter 3 horizontal storage tanks, 6 meters long
	(2) Solvent Extraction	5 Units, each with 8 columns 2 banks of heat exchangers/cooling coils/accumulators 2 pipe furnaces 1 pump building 1 support building 3 cylindrical storage tanks (one unit has only one), 4 horizontal storage tanks, 9 meters long 1 Support building
	(3) Blending, Treating, Packing, and Shipping	1 Blending and treating unit with 1 building with 11 batch agitators/mixers 2 pipe furnaces 2 processing buildings 2 support buildings 7 cylindrical storage tanks 3 2 2 3 tank bases
	(4) Unidentified Secondary Processing	1 Unit with 1 processing building 5 short columns 6 cylindrical processing/storage tanks 1 gasholder diameter
	(5) Probable Hydrotreating	1 Unit with 3 columns 1 bank of heat exchangers/cooling coils/accumulators 1 pipe furnace 1 pump building 2 cylindrical storage tanks, 3 meters in diameter 2 horizontal storage tanks, 9 meters long
	(6) Dewaxing	3 Units, each with 1 solvent regeneration section 1 bank of heat exchangers/cooling coils/accumulators 1 chiller building with attached crystallizer drums (drums roof covered in one unit) and attached cluster of processing equipment 1 filter building with 3 hoppers 1 control building 1 gasholder

25X1

25X1

25X1

25X1

25X1

TOP SECRET RUFF

TOP SECRET RUFF

Area	Functional Description	Equipment and Facilities
H (Cont)		1 Unit with 1 solvent regeneration section 1 bank of heat exchangers/cooling coils/accumulators 1 chiller building with attached crystallizer drums and attached cluster of processing equipment 1 filter building with 3 hoppers 1 control building 1 pump/processing building with 8 cylindrical and 3 horizontal processing/storage tanks 1 gasholder, 25X1 in diameter
	(7) Clay Treatment	1 Unit with 4 columns 10 processing/treating tanks 2 pipe furnaces 1 processing building attached to clay receiving building by a conveyor 1 support building 3 Support buildings
I	Secondary Processing (1) Dewaxing	1 Unit with 1 solvent regeneration section 1 bank of heat exchangers/cooling coils/accumulators 1 chiller building with attached crystallizer drums and attached cluster of processing equipment 1 filter building with 3 hoppers 1 processing building with 3 horizontal processing/storage tanks 1 horizontal processing/storage tank 2 support buildings 1 cylindrical storage tank, 9 meters in diameter 1 gasholder, 9 meters in diameter
	(2) Probable Synthetic Fatty Acid Production	1 Unit with 1 cluster of processing equipment 2 processing buildings 6 processing/storage tanks 1 shipping building with 2 processing/storage tanks 1 support building 3 cylindrical storage tanks, 25X1
J	Possible Hydrotreating	1 Unit with 9 columns 3 probable reactors 1 bank of heat exchangers/cooling coils/accumulators 3 pipe furnaces 1 processing building with attached cluster of processing equipment 20 cylindrical storage tanks, 9 meters in diameter

TOP SECRET RUFF

TOP SECRET RUFF

25X1

Area	Functional Description	Equipment and Facilities	
K	Desalting and Unidentified Secondary Processing		
	(1) Desalting	3 Units, each with 1 cluster of processing equipment 1 processing building 1 bank of heat exchangers/cooling coils/accumulators 1 horizontal processing/storage tank (one unit does not have a tank) 1 support building	
		6 Horizontal storage/processing tanks	
	(2) Unidentified Secondary Processing	1 Unit with 3 columns 2 banks of heat exchangers/cooling coils/accumulators (one on the roof of a building) 1 processing building 1 pipe furnace 1 cylindrical processing/storage tank	
		7 Miscellaneous buildings	
		5 Cylindrical storage tanks,	25X1
L	Crude Oil Distillation		
	(1) Crude Oil Distillation	2 Units, each with 1 atmospheric column 1 vacuum column 8 other columns (4 are probably rerun columns) 2 banks of heat exchangers/cooling coils/accumulators 2 pipe furnaces 2 pump/compressor buildings 1 treating building with 7 attached horizontal tanks and 2 cylindrical tanks (one unit has an additional tank and a support building) 2 cylindrical storage tanks,	25X1
		2 Support buildings	
	(2) Crude Oil Distillation	2 Units, each with 1 atmospheric column 1 vacuum column 7 other columns (3 are probably rerun columns) 3 banks of heat exchangers/cooling coils/accumulators 3 pipe furnaces 1 pipe furnace/heater 2 pump/compressor buildings 1 treating building with 7 attached horizontal tanks and 8 cylindrical tanks 1 desalting unit with 2 spheres, 3 horizontal tanks, 1 bank of heat exchangers, and 1 processing building	
		3 Support buildings	

TOP SECRET RUFF

25X1

TOP SECRET RUFF

Area	Functional Description	Equipment and Facilities
M	Storage	<p>20 Miscellaneous buildings (one with 4 associated cylindrical tanks [redacted] and one [redacted] 25X1 with 4 cylindrical and 3 horizontal processing/storage tanks)</p> <p>177 Cylindrical storage tanks</p> <ul style="list-style-type: none"> 3 [redacted] 25X1 3 21-meter-diameter 1 18-meter-diameter 9 [redacted] 25X1 12 15-meter-diameter 4 [redacted] 25X1 50 12-meter-diameter 14 [redacted] 25X1 26 9-meter-diameter 20 [redacted] 25X1 30 6-meter-diameter 5 3-meter-diameter <p>1 Semiburied storage tank</p> <p>2 Covered water reservoirs</p> <p>8 Tank bases</p>
N	Possible Synthetic Fatty Acid Production	<p>1 Unit with</p> <ul style="list-style-type: none"> 4 processing buildings (two with associated cluster of processing equipment) 18 cylindrical processing/storage tanks 5 support buildings
O	Thermal Cracking	<p>2 Units, each with</p> <ul style="list-style-type: none"> 2 reactors 1 fractionator 1 flash tower 3 banks of heat exchangers/cooling coils/accumulators 2 pipe furnaces 1 pump building 1 vapor recovery section with <ul style="list-style-type: none"> 1 column 1 bank of heat exchangers/cooling coils/accumulators 1 compressor building 2 cylindrical storage tanks, [redacted] 25X1 4 horizontal storage tanks, 6 meters long <p>1 Unit with</p> <ul style="list-style-type: none"> 2 reactors 1 fractionator 1 flash tower 2 banks of heat exchangers/cooling coils/accumulators 2 pipe furnaces 1 pump building 1 vapor recovery section with <ul style="list-style-type: none"> 2 columns 1 bank of heat exchangers/cooling coils/accumulators 1 compressor building (attached to pump building) 1 building with 2 cylindrical storage tanks [redacted] 25X1 diameter and 2 horizontal storage tanks 6 meters long <p>2 Support buildings</p>

TOP SECRET RUFF

TOP SECRET RUFF

25X1
25X1

Area	Functional Description	Equipment and Facilities	
P	Gas Purification and Cracking	1 Unit with 9 gas purification columns 9 other columns 3 clusters of processing equipment 2 pipe furnaces 2 processing buildings	
Q	Sulfuric Acid and Unidentified Secondary Processing (1) Sulfuric Acid	Equipment not enumerated	
	(2) Unidentified Secondary Processing	1 Unit with 2 clusters of processing equipment 1 processing building 2 support buildings 2 cylindrical storage tanks, 21 meters in diameter 1 Unit with 4 short processing towers 1 processing building 3 support buildings 3 cylindrical storage tanks, 15 meters in diameter	
R	Processing Unit Under Construction	Equipment not enumerated	
S	Storage and Water Cooling	2 Cooling towers 9 Miscellaneous buildings 27 Cylindrical storage tanks 4 24-meter-diameter 1 <input type="text"/> 17 15-meter-diameter 4 <input type="text"/> 1 <input type="text"/> 2 Semiburied storage tanks 2 Covered water reservoirs	25X1 25X1
T	Possible Hydrotreating	1 Unit with 5 columns 2 banks of heat exchangers/ cooling coils/accumulators (one is on the roof of a building) 3 pipe furnaces 1 pump building 1 control building 1 support building 3 cylindrical storage tanks, 15 meters in diameter 2 Support buildings 5 Cylindrical storage tanks 4 12-meter-diameter 1 <input type="text"/>	25X1
U	Secondary Processing (1) Catalytic Reforming-Hydrotreating	1 Unit with 5 reactors 3 columns 1 cluster of processing equipment 2 banks of heat exchangers/cooling coils/accumulators 1 large furnace 2 pump buildings	

TOP SECRET RUFF

25X1

TOP SECRET RUFF

25X1

Area	Functional Description	Equipment and Facilities
U (Cont)		1 hydrotreating section with 4 columns 1 cluster of processing equipment 1 pump/compressor building 1 control building 3 cylindrical storage tanks, 3 meters in diameter
	(2) Probable Catalytic Reforming	1 Unit with 8 columns 3 clusters of processing equipment 2 banks of heat exchangers/cooling coils/accumulators 4 processing buildings (one with 4 horizontal tanks) 1 pipe furnace 1 pump building 1 control building
V	Unidentified Secondary Processing	
	(1) Unidentified Secondary Processing	1 Unit with 4 columns 2 clusters of processing equipment 1 bank of heat exchangers/ cooling coils/accumulators 2 processing buildings 2 cylindrical storage tanks, 6 meters in diameter 4 Support buildings 3 Cylindrical storage tanks, 12 meters in diameter
	(2) Unidentified Secondary Processing	1 Unit with 4 columns 2 clusters of processing equipment 1 bank of heat exchangers/ cooling coils/accumulators 1 processing building 2 pipe furnaces 1 cylindrical processing/ storage tank 2 horizontal processing/ storage tanks
	(3) Unidentified Secondary Processing	1 Unit with 1 reforming section (contains 7 reactors, 1 furnace, 1 processing building and 2 banks of heat exchangers/ cooling coils/accumulators) 14 columns 3 clusters of processing equipment 3 pump/compressor buildings 2 cylindrical processing/ storage tanks 1 horizontal processing/ storage tank

TOP SECRET RUFF

25X1

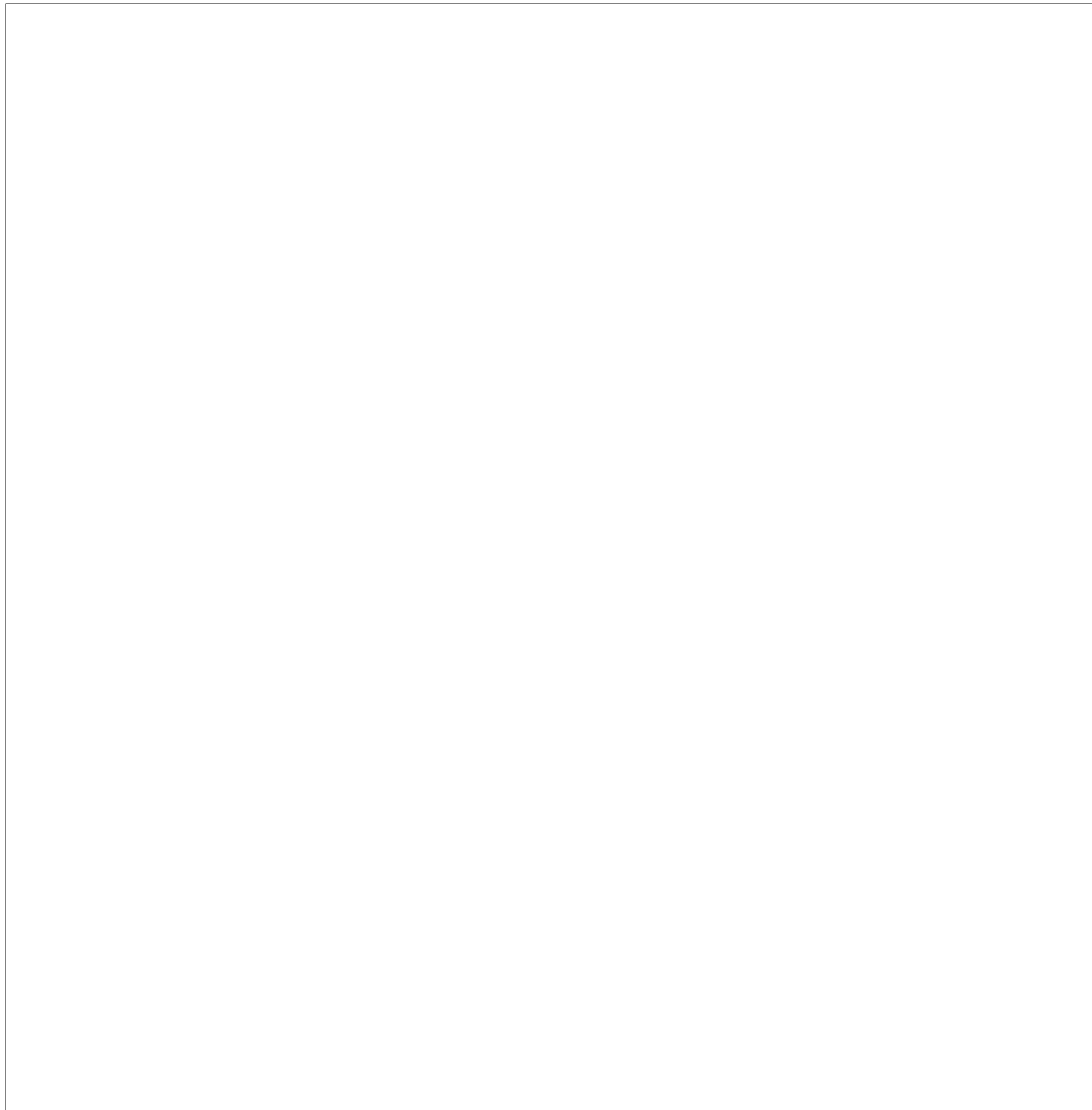
TOP SECRET RUFF

Area	Functional Description	Equipment and Facilities
V (Cont)	(4) Unidentified Secondary Processing	1 Unit with 3 columns 2 clusters of processing equipment 3 processing buildings 1 pump/compressor building 1 support building 2 cylindrical processing/storage tanks 1 gasholder, 15 meters in diameter 1 semiburied reservoir
W	Storage	1 Pump building 18 Cylindrical storage tanks 12 15-meter-diameter 6 18 Horizontal storage tanks 1 21-meter-long 2 15-meter-long 15 individually roof covered
X	Secondary Processing (1) Probable Catalytic Reforming-Hydrotreating	1 Unit with 4 reactors 4 banks of heat exchangers/cooling coils/accumulators 2 pipe furnaces 1 pump building 1 hydrotreating section with 6 columns 1 cluster of processing equipment 1 bank of heat exchangers/cooling coils/accumulators 2 processing buildings (one with 1 cylindrical and 6 horizontal tanks) 2 pipe furnaces 1 control building
	(2) Probable Catalytic Reforming-Hydrotreating	1 Unit with 4 reactors 2 banks of heat exchangers/cooling coils/accumulators 2 pipe furnaces 1 pump building 1 hydrotreating section with 10 columns 2 banks of heat exchangers/cooling coils/accumulators 2 pump/compressor buildings 4 cylindrical processing/storage tanks 8 horizontal processing/storage tanks
	(3) Unidentified Secondary Processing	1 Unit with 8 columns 1 cluster of processing equipment 5 processing buildings 4 horizontal processing/storage tanks 6 support buildings 1 gasholder diameter
Y	Processing Unit Under Construction	Equipment not enumerated
Z	Processing Unit Under Construction	Equipment not enumerated

TOP SECRET RUFF

25X1

25X1



Map

8th RTS. US Air Target Chart, Series 200, Sheet M0155-21HL, 4th edition,
May 1970, Scale 1:200,000 (SECRET [redacted])

25X1
25X1

Documents

1. 7053rd AISS. AIIR 6328-57 New Gor'kiy Oil Refinery, 14 August 1957,
(CRS Plant Folder No. 6205931) (UNCLASSIFIED)
2. 7000th ASW. AIIR 6801-58 First Unit of the Novo-Gor'kovskiy Refinery in
Kstovo Started Production, 22 September 1965, (CRS Plant
Folder No. 6205931) (UNCLASSIFIED)

Requirement

COMIREX N06
Support Number 422974

TOP SECRET RUFF

25X1

Top Secret